Chapter 17

BY :

ETISHA JAIN

VISHU GOYAL

LINUX 17.1 Understanding the Boot Procedure

- power of self test
- either read BIOS or UEFI
- Then GRUP boot loader is loaded
- THE GRUP boot loader has reponsibility of loading the kernel
- and also in GRUP boot loader there is a menu you can specify the boot arguments
- the kernel always comes with the helper
- The initramfs, the initial ram file system is the helper which comes with the kernel.
- initramfs that contains a temporary root directory but also contain all the drivers that needed in order to start the OS
- then systemd process, it is a manager of everything
- systemd basically goes through two different phases
- phase 1 -> **base-OS** that is all the essential part is loaded like devices, mount so on
- phase 2 -> services
- and final loading

LINUX 17.2 Modifying Grub2 Runtime Parameters

- From the GRUb2 boot menu, press e to edit runtime boot optioons
- Press c to enter the Grup2 command mode
- but it is not that much easy because you manually specify all the options
- From command mode, type help for an overview of available options

Practical

- reboot
- press c / e
- help
- press escape to go back to the menu
- In the menu, you can see that there are two default option if you have upgrade your kernel you might see multiple options because by default, the last three kernels will be kept around as well.
- by default it will see that the rescue kernel, the rescue kernel is the kernel that boots with very restrictive options
- so you will have a system with minimal performance but the perpose of the rescue kernel is to increase chances to boot your system anyway in case anything is wrong
- In default kernel select and then press e
- ctrl x to start
- then enter the passphrase
- if you don't provide pass phrase then wait 30 to60 sec it will automatically on the login page

LINUX 17.3 Modifying Grub2 Persistent Parameters

- . To edit Persistent Grub2 Parameters, edit the configuration file in /etc/default/GRUB.
- . After writing changes , compile changes to grub.cfg
- . grub2-mkconfig -o /boot/grub2/grub.cfg (on BIOS)
- . grub2-mkconfig -o /boot/efi/EFI/redhat/grub.cfg (on EFI)

Practical

- - mount | grep '^/'
- - mount | grep '^/' | grep -i efi
- - vim etc/default/grub
- GRUB_CMDLINE_LINUX remove rhgb and quiet
- - grub2-mkconfig -o /boot/grub2/grub.cfg
- - vim /boot/grub2/grub.cfg
- Don't write in this file becoz as an update comes this file will be and will be configured again so changes will be lost.
- - reboot

Linux 17.4 Managing systemd Targets

- . A **systemd target** is a group of units (very useful for booting a system)
- . Some targets are isolatable which means that they define the final state a system is starting in
- . **emergency.target** (minimal target allows to do troubleshooting)
- **. rescue.target**(also troubleshooting target but allows more services)
- . **multi-user.target**(in which server usually starts into it's the state where all services are running)
- . **graphical.target**(all services are started and u get a graphical user interface as well)
- . When enabling a unit , it is added to a specific target

PRACTICAL

- - systemctl disable httpd
- - systemctl enable httpd
- - systemctl cat enable httpd
- Wanted by this is a normal operational state of a server but not to the minimal state that you get into when you are in rescue mode
- - systemctl cat multi-user.target
- - cd /etc/systemd/system/
- - ls
- - cd multi-user.target.wants/
- - ls -l
- So when we enable a service a symbolic link is created here which make sure that this target is started and this service is called.
- - systemctl list-dependencies
- basic.target are those services that always need to be there and it is equivalent to rescue.target becoz these are services that we normally wanna have access to .

Linux 17.5 Setting the default systemd target

- . Use systemctl get-default to see the current default target.
- . Use systemctl set-default to set a new default target

- **Practical**
- - systemctl get-default
- - systemctl set-default multi-user.target
- - reboot
- Login and then
- - systemctl set-default graphical.target
- - systemctl start graphical.target

Linux 17.6 Booting into a specific target

- . On the grup2 boot prompt use systemctl.unit=xxx.target to boot into a specific isolatble target
- . To change between targets on a running system use systemctl isolate xxx.target
- isolate is good becoz it allows in both direction minimal to higher and higher to lower

Practical

On GRUB boot prompt
- systemd.unit=rescue.target
- ctrl-x
- systemctl list-units
- systemctl isolate emergency.target
- systemctl list-units
- systemctl start graphical.target

Thank you